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ABSTRACT

The academic progress of minority and nonminority community college transfer students toward baccalaureate degree completion was studied using term-by-term longitudinal files. The study sample consisted of 1,179 students entering community college in fall 1985 as first-time students and transferring to the university by 1991, and 990 students entering the university in 1985 as first-time students. Logistic regression analyses identified factors among sets of student-oriented, institution-oriented, enrollment-related, and transfer-related variables that had significant impacts on degree completion for the community college entering cohort. Cohort analyses indicated initial enrollment at the community college lessened the probability of graduating within a reasonable amount of time, particularly for minority students. The probability of degree completion for both minority and nonminority transfer students was enhanced by having a greater percentage of credits accepted, remaining in good academic standing at the university, enrolling full-time, and maintaining continuous enrollment. Findings from this study have implications for academic advising and counseling at the community college as well as admissions and competency policies for transfer students at the university. (Contains 67 references.) (SW)

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IMPACTS ON BACCALAUREATE DEGREE COMPLETION:

A LONGITUDINAL ANALYSIS OF COMMUNITY COLLEGE TRANSFER STUDENTS

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ABSTRACT

This paper investigates the academic progress of minority and non-minority community college transfer students toward baccalaureate degree completion using term-by-term longitudinal files. Cohort analyses indicated initial enrollment at the community college lessened the probability of graduating within a reasonable amount of time, particularly for minority students. Logistic regression analyses identified factors among sets of student-oriented, institution-oriented, enrollment-related, and transfer-related variables that had significant impacts on degree completion for the community college entering cohort. Findings from this study have implications for academic advising and counseling at the community college as well as admissions and competency policies for transfer students at the university.

AIR

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This paper was presented at the Thirty-Fifth Annual Forum of the Association for Institutional Research held at the Boston Sheraton Hotel & Towers, Boston, Massacusetts, May 28-31, 1995. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Jean Endo
Editor
AIR Forum Publications

IMPACTS ON BACCALAUREATE DEGREE COMPLETION: A LONGITUDINAL ANALYSIS OF COMMUNITY COLLEGE TRANSFER STUDENTS

Rationale for the Study

Confronted with increasing demands for improving the quality of American education, community colleges have embarked on numerous efforts to produce evidence of institutional effectiveness in promoting the educational progress of their students. The impetus for many of these efforts evolves out of a perception of decline in the community college transfer function, with debates focusing on whether or not the community college as an institution provides students a viable route for baccalaureate degree achievement. The significance of access to a college degree is evident particularly when viewed in terms of economic advancement. Degree attainment, whether associate or baccalaureate, has been linked positively to socioeconomic mobility; not only are unemployment rates lower for college graduates than for high school graduates but median incomes are greater (Adelman, 1992; National Center for Education Statistics, 1991; Ottinger, 1991b). The viability of the transfer function thus plays a significant role in providing the general public a means not only for educational opportunity but for social and economic advancement as well.

The concern over transfer effectiveness further intensifies with regard to minority students, who disproportionately utilize community colleges as an initial avenue for entry into higher education. Recent statistics indicate minorities represent 26 percent of two-year enrollment in higher education, compared to only 19 percent of four-year enrollment and 14 percent of baccalaureate degrees (Carter & Wilson, 1994). Karabel's (1986) argument that the community college in effect limits educational opportunities relies not only on the premise of reduced probability of attaining a baccalaureate degree, but also on the relatively unchallenged proposition that community colleges are in themselves representative of the lower rung of a stratified higher education system. Consequently, by disproportionately enrolling minorities and other economically or academically disadvantaged groups, community colleges can perpetuate the educational and socioeconomic disparities already engrained as a societal hierarchy.

Review of the Literature

Within the context of Karabel's argument of social stratification, Dougherty (1987, 1992) synthesized data from a number of longitudinal studies that compared degree achievement of transfer students with that of four-year native students. After controlling for differences in academic ability, ethnicity, and socioeconomic status, Dougherty estimated community college entrants earned approximately 11 to 19 percent fewer baccalaureate degrees than did their four-year counterparts, suggesting that indeed a "baccalaureate gap" exists between community college and four-year college entrants.

Early evidence for this effect focused on longitudinal analyses of either entering freshman cohorts or high school graduating classes. Alba and Lavin (1981), for example, found community college entrants to the City University of New York (CUNY) were 11 percent less likely than four-year entrants to obtain a baccalaureate degree after five years. Astin (1982), in a national study of entering freshmen, and Kinnick and Kempner (1988), in a study of Oregon high school graduates, found significant associations between baccalaureate attainment and initial enrollment in a four-year and a two-year institution. A number of other studies utilized data from the 1972 National Longitudinal Study (NLS) to track seniors four years after high school graduation, reporting similar discrepancies in probability of degree completion ranging from the 11 percent to 19 percent reported above (Anderson, 1984; Grubb, 1991; Nunley & Breneman, 1988; Velez, 1985).

Statistics by ethnicity evoke even greater concern. Analyzing data from the CUNY study, Lavin and Crook (1990) found that Blacks and Hispanics were approximately 27 percent less likely than Whites to earn a baccalaureate degree regardless of point of entry. After controlling for background characteristics, the differential was reduced but Blacks and Hispanics still achieved three and eight percent fewer baccalaureate degrees, respectively. Astin (1982) similarly noted that minorities were less likely than Whites to complete a baccalaureate degree,

regardless of whether they entered a two-year or four-year institution initially. A more recent analysis of the 1980 new entrants into Illinois community colleges who completed a bachelor's degree by 1988 revealed that, although comprising 18 percent of the original cohort entering into academic programs, Blacks represented only five percent of the baccalaureate recipients among that cohort (Illinois Community College Board, 1990).

Other studies, including Dougherty (1987, 1992) have attempted to explain both the perceived decline in transfer activity and the negative impact of the community college on baccalaureate degree attainment in terms of intervening factors. Each of these factors, most of which are classified as either *student-oriented* or *institution-oriented*, have been shown to be positively or negatively associated with the educational progress of community college transfer students.

Factors Impacting Degree Attainment

Student-oriented factors. Because community colleges typically enroll disproportionately more academically and economically disadvantaged students with a diverse set of goals and intention, many studies attempt to control for entering student characteristics. In general, the students least likely to transfer to a four-year institution and ultimately to receive a baccalaureate degree are minority students, students of low socioeconomic status, older students, and females (Adelman, 1992; Crook & Lavin, 1989; Grubb, 1991; Holahan, Green, & Kelley, 1983; Illinois Community College Board, 1990; Jones & Lee, 1992; Kinnick & Kempner, 1988; Lombardi, 1979; Maryland State Board for Community Colleges, 1983). In addition to demographic factors, studies consistently have found that poor high school preparation and achievement negatively impacts the probability of transferring to a four-year institution and persisting to degree completion (Kinnick & Kempner, 1988; Smith & Szeszycki, 1990; Webb, 1989). Other studies, using High School and Beyond (HS&B) and NLS data, indicated that

enrollment in academic tracks during high school had significant positive impacts on transfer probability (Lee & Frank, 1989; Velez & Javalgi, 1987).

Student intentions to transfer also have been shown to be significant predictors of community college persistence (Bers & Smith, 1991; Voorhees, 1987). Determination of intent is becoming increasingly difficult, however. Although 75 percent of full-time community college freshmen intend to complete a baccalaureate degree, many students who aspire to a baccalaureate degree show little predisposition to transfer in terms of actual behavior in transfer-related activities (Cohen, Brawer, & Bensimon, 1985) or incorporate a mixture of academic, remedial, and vocational courses regardless of declared intent or program orientation (Eaton, 1990; Palmer, 1990).

Institution-oriented factors. Institutional perspectives typically reported in the literature that have potential impact on transfer student progress focus primarily on acceptance of transfer credits, emphasis on vocational programs, and academic/social integration of students. For example, in a national study of urban universities, Richardson and Bender (1987) reported up to 58 percent of transfer students lost credit and 25 percent had additional credits accepted but not counted toward a degree. In another study of minority transfer students, Pincus and DeCamp (1989) found that the students who did not complete a baccalaureate degree were twice as likely as degree completers to lose credits upon entry into the four-year institution.

Evidence for a "rise in vocationalism" has been reflected in recent years in the declining proportions of students completing academic associate's degrees coupled with increasing proportions receiving vocational degrees (Carter, 1990; Palmer, 1987-88; Shearon, Brownlee, & Johnson, 1990). Richardson and Bender (1987) also noted greater emphasis on vocational rather than academic programs in urban community colleges, which tend to enroll large numbers of minority students.

Finally, a number of studies have applied Tinto's model of student attrition (1987) to identify effects of academic and social integration on student progress. Factors related to

academic integration in particular are cited frequently and typically include academic progress (measured by grade point average at both the community college and the four-year institution) and initial grade point average after transfer. In particular, high positive correlations between community college grade point average and university grade point average often are reported (Amonette, 1988; Illinois Community College Board, 1986; Phlegar, Andrew, & McLaughlin, 1981; Young, 1982). Other studies focus on the effect of "transfer shock," which is characterized by a significant drop in grade point average during the first year after transfer that tends to improve with continued persistence. Numerous studies have supported this phenomenon in more recent years, finding that transfer students were able to recuperate from an initial drop in grade point average during the first semester after transfer and perform comparable to native students in subsequent years (Amonette, 1988; California Community Colleges, 1989; Doucette & Teeter, 1985; Kissler, Lara, & Cardinal, 1981; Owen, 1991; Richardson & Doucette, 1982).

Non-Traditional Patterns of Enrollment and Transfer

Much of the current research suggests that other factors may be involved that more adequately reflect the diverse behavior found among the community college student population. Indeed, as minorities and other non-traditional students continue to utilize the community college as the entry point into higher education, the character of the community college student population becomes increasingly complex. This complexity is apparent as students engage more frequently in non-traditional, often ad hoc, attendance patterns designed to meet individual goals or needs (Adelman, 1992; Cohen & Brawer, 1989; Palmer, 1990).

Non-traditional enrollment patterns. A number of studies have looked at the impact of entering postsecondary education (two-year or four-year institutions) immediately after high school compared to entering after a delayed period of time. Kempner and Kinnick (1990) viewed immediate entry into college after high school graduation as a "window of opportunity"

that increases the likelihood of completing a baccalaureate degree. In their longitudinal study of Oregon high school seniors, they determined that 38 percent of early entrants completed a baccalaureate degree within 10 years compared to only eight percent of delayed entrants. Research on community college students also has found that part-time students are less likely to declare transfer as a goal than are full-time students (Lombardi, 1979; Kissler, 1981; Michigan State Board of Education, 1990). For example, in a study of urban community colleges, Cohen, Brawer, and Bensimon (1985) found that only 45 percent of part-time students planned to transfer compared to 62 percent of full-time students. Furthermore, part-time students are more likely to either drop out or stop out of college (Michigan State Board of Education, 1990; Walleri, 1981), consequently decreasing the chances of transfer and baccalaureate degree attainment (Ottinger, 1991a).

In addition to enrolling part-time, increasing numbers of students are engaging in stopout behavior during the course of their college education. Yet, stopouts have been shown to have lower rates of baccalaureate degree attainment than students who persist on a continuous basis. For example, one study reported only 39 percent of stopouts earned a degree within six years compared to 74 percent of persisting students (Carroll, 1989, cited in Ottinger, 1991a).

Non-traditional transfer patterns. Although the traditional mode historically has been to transfer upon completion of an associate's degree, today that pattern is atypical of community college students. Not only are students transferring without an associate's degree, they are transferring after completing a wide range of community college credits and increasingly are engaging in behavior that does not reflect the traditional linear flow from two-year to four-year institutions. Adelman (1992), for instance, reported that only 20 percent of community college students earned an associate's degree within 12 years after high school graduation. Other studies have reported similar percentages of transfers lacking an associate's degree, ranging from 59 percent to 73 percent (Anderson, 1986; Grubb, 1991; Illinois Community College Board,

1986; Vail, 1987). Yet, earning an associate's degree can be an important factor in the academic success of transfers (Illinois Community College Board, 1984; Radcliffe, 1984).

Many students in fact never complete the equivalent of two years of general education at the community college (Illinois Community College Board, 1986; Kelley, 1991). In general, studies show students transferring in high hours tend to perform better academically and have higher persistence or graduation rates than students transferring in low hours (Fernandez, Raab, & Smith, 1984; Illinois Community College Board, 1986; Radcliffe, 1984; Smith & Szeszycki, 1990; Weeks & Wurster, 1989; Yaklin, 1987). For example, Richardson and Doucette (1982) reported that 42 percent of transfers with two years of earned credit graduated within five years, but only 25 percent of those with one year of credit did so.

Finally, students today are utilizing multiple institutions in a variety of student flow patterns, such as reverse transfer (transferring from a four-year to a two-year institution), lateral transfer (transferring from another 2-year institution), and co-enrollment (i.e., simultaneous enrollment) at both a four-year and two-year institution (de los Santos & Wright, 1990; Fryer & Turner, 1990; Mitchell & Grafton, 1985; Palmer & Eaton, 1991). Primary reasons for leaving four-year institutions to attend a two-year institution include location, cost, ability to work while attending school, academic indecision, academic difficulty, and availability of specific programs (Benedict, 1987; Hogan, 1986; Kajstura & Keim, 1992; Mitchell & Grafton, 1985).

Statement of the Problem

Community colleges undoubtedly provide an indispensable link for many students aspiring to achieve a baccalaureate degree. However, current studies suggest community colleges may not adequately fulfill that role, thus blocking opportunities for educational and socioeconomic advancement, particularly for minority students. Because of a paucity of reliable, consistent data on community college transfer students, researchers, administrators, and educators alike are unable to address fully the potential problems inherent in the transfer

process. In addition, minority students continue to represent a proportionately smaller segment of the university student population as well as a smaller portion of the baccalaureate degree recipients. If the representation of minorities is to be increased at critical points along the higher educational pipeline, greater insight into the factors that characterize successful minority and non-minority transfer students needs to be obtained.

To this end, then, the following study addresses two general issues of interest: (1) Do minority and non-minority students entering community colleges as new freshmen have characteristics and graduation rates different than those for students entering four-year institutions as new freshmen? (2) Which characteristics or factors contribute to the successful completion of the baccalaureate degree for both minority and non-minority students transferring from a community college to a four-year institution?

Research Methodology

To determine whether initial attendance at a community college promotes or hinders the academic progress of its students in attainment of the baccalaureate degree, this study analyzed data from a community college district and a public university, both serving a large, metropolitan area in the southwest. Focusing on the characteristics identified in the literature, variables were extracted from two comparable longitudinal files, one for the community college and one for the university, each containing information on its respective students from fall 1985 through fall 1994. The data incorporated not only a full spectrum of demographic, admissions, and transfer information on each student but also a complete set of transcripts or course information for each term of enrollment during the nine-year time frame. The final study population (excluding students of unknown ethnicity) consisted of 1,179 individuals entering the community college in fall 1985 as first-time students, i.e., new to higher education, and ultimately transferring to the university by fall 1991 and 990 individuals entering the university in

fall 1985 as first-time or "native" students with no known credit hours from a previous postsecondary institution.

The first portion of the study focused on a descriptive comparison of the two entering cohorts in terms of entering characteristics (age at entry and registered hours), first semester performance (GPA and earned hours), and graduation characteristics (years to graduation, GPA at graduation, and earned hours at graduation). In addition, a cohort survival analysis was conducted in which new freshmen at both the university and the community college were tracked from entry to baccalaureate degree completion, thus allowing a comparison of five-year, seven-year, and nine-year degree completion rates for minority and non-minority subgroups within each entering cohort. The issue of comparability between the two groups was addressed in part by limiting the community college cohort to those who ultimately transferred to the university within six years, thus indirectly controlling for entering characteristics related to academic preparation. Any student admitted to the university must have at least a 2.00 CGPA for all postsecondary coursework; in addition, students transferring with less than 36 hours must also meet freshman general aptitude and competency requirements. Comparability was addressed further by restricting the calculation of persistence and graduation rates to students attaining junior status (i.e., completing 56 or more credit hours). Because the majority of community college students (approximately 60 percent) transferred 56 or more hours to the university, limiting the study group in this manner eliminated bias against the university entering freshmen, many of whom drop out or transfer after the first year of enrollment.

The second portion of the study focused on the development of a model to identify significant determinants of degree completion for the community college entering cohort. A univariate analysis indicated that ethnicity was not a significant determinant in this study. However, all analyses were disaggregated by ethnicity for comparative purposes. The analysis utilized stepwise logistic regression, in which the variables of interest were entered into separate models for minorities and non-minorities one at a time based on which would produce

the most significant effect after taking into account variables already in the model. Final evaluation of the model was based on (1) goodness-of-fit statistics, i.e., the likelihood ratio statistic (G^2) and associated chi-square statistic (X^2), representing a test of joint significance of all explanatory variables in the model, and (2) predictive ability of the model, indicated by the percentage of cases correctly predicted (based on a probability level of .50) and the percentage of concordant-pair predictions (a measure of association between observed responses and predicted probabilities).

Summary of Findings

Differences Based on Descriptive Statistics and the Cohort Survival Analysis

Table 1 provides a comparison of the community college and the university entering cohorts in terms of entering characteristics, performance, and graduation characteristics. Both cohorts reflected similar ethnic proportions: 17 percent of the community college entrants and 15 percent of the university entrants were minorities. In comparison to the community college entrants, the university entrants tended to be slightly younger and registered for more hours in the initial semester. In addition, the university entrants on average completed more hours in the first semester and exhibited higher first semester GPAs. In terms of graduation characteristics, although both groups earned on average the same number of hours by time of graduation, the community college entrants tended to require longer periods of time to graduate (one year longer on average). Despite the longer time frames, the community college entrants graduated with similar academic records compared to the university entrants. Minorities among the community college entrants, however, exhibited the lowest first semester GPA (2.12 compared to over 2.30 for the remaining subgroups) and the lowest GPA at graduation (2.77 compared to approximately 3.00 for the remaining subgroups).

Table 2 provides persistence and graduation rates for minority and non-minority entrants with 56 or more earned hours. The university entrants as a group consistently had five-year,

TABLE 1

Characteristics of Community College and University Entering Cohorts

	Community College Entrants	*University Entrants*
MINORITY	N = 197	N = 145
Entering Characteristics:		
Average Age	19.8	18.0
Average Registered Hours	10.8	13.6
First Semester Performance:		
Average Semester GPA	2.12	2.31
Average Semester Hours	8.8	11.8
Graduation Characteristics:		
Average Years to Graduation	6.2	5.1
GPA at Graduation	2.77	2.94
Hours at Graduation	138	138
NON-MINORITY	N = 982	N = 845
Entering Characteristics:		
Average Age	18.7	18.1
Average Registered Hours	10.8	13.8
First Semester Performance:		
Average Semester GPA	2.36	2.46
Average Semester Hours	9.2	12.2
Graduation Characteristics:		
Average Years to Graduation	6.1	4.9
GPA at Graduation	2.96	3.02
Hours at Graduation	136	135

seven-year, and nine-year graduation rates notably higher than those for the community college entrants. After seven years, approximately 76 percent of the university minorities and 83 percent of the university non-minorities had graduated compared to only 49 percent of the community college minorities and 54 percent of community college non-minorities. However, over one fourth of the community college entrants continued to persist. Extending the timeline to nine years resulted in only minor changes to the university graduation rates, while large numbers of community college entrants continued to graduate. By fall 1994, 70 to 75 percent of the community college entrants either graduated or were still persisting compared to approximately 85 percent of the university entrants. Despite the increased graduation rate over an extended period of time, the community college entrants still fell behind the university entrants by approximately 10 percentage points.

Table 3 provides more detailed information on students who no longer persisted or graduated by fall 1994. The data indicate that community college non-persisters on average had lower CGPAs (approximately 2.00), and only 52 to 59 percent of minorities and non-minorities, respectively, were in academic good standing at time of departure, despite spending over six years at the two institutions combined. The university non-persisters, on the other hand, had proportionately more in good standing (65 percent of minorities and 88 percent of non-minorities), CGPAs of approximately 2.45, and an investment of only 4-5 years prior to departure. Such data suggest a larger proportion of the university non-persisters may be transferring to another institution compared to community college non-persisters.

Findings from the Logistic Regression Analysis

Brief descriptions of the fourteen variables entered into the regression model as independent variables and the range of values associated with each are provided in Table 4. In addition, Table 5 provides frequencies or means for each variable within the minority and non-minority subgroups for both graduates and non-graduates. Table 6 lists the variables and

TABLE 2

Five-Year, Seven-Year, and Nine-Year Persistence and Graduation Rates

for Entrants With 56 or More Total Earned Hours

	FALL 1990		*FALL 1992*		*FALL 1994*	
	No.	*Pct.*	*No.*	*Pct.*	*No.*	*Pct.*
COMM COLLEGE ENTRANTS						
Minority:	179		179		179	
Graduates	31	17.3%	88	49.2%	111	62.0%
Persisters	131	73.2%	52	29.0%	14	7.8%
Non-Persisters	17	9.5%	39	21.8%	54	30.2%
Non-Minority:	878		878		878	
Graduates	191	21.8%	477	54.3%	594	67.7%
Persisters	579	65.9%	232	26.4%	66	7.5%
Non-Persisters	108	12.3%	169	19.2%	218	24.8%
UNIVERSITY ENTRANTS						
Minority:	106		106		106	
Graduates	62	58.5%	80	75.5%	84	79.2%
Persisters	34	32.1%	11	10.4%	5	4.7%
Non-Persisters	10	9.4%	15	14.2%	17	16.0%
Non-Minority:	584		584		584	
Graduates	378	64.7%	482	82.5%	490	83.9%
Persisters	139	23.8%	27	4.6%	13	2.2%
Non-Persisters	67	11.5%	75	12.8%	81	13.9%

Note. Persisters include students enrolled during the given semester as well as students not enrolled but returning in a subsequent semester.

TABLE 3

Fall 1994 Non-Persisters Among Community College and University Entrants

With 56 or More Total Earned Hours

	Minority	*Non-Minority*
COMMUNITY COLLEGE ENTRANTS	N = 54	N = 218
Total Earned Hours	90.6	85.2
Total Years	6.5	6.1
Cumulative GPA	1.92	2.14
% in Good Standing	51.8%	58.7%
UNIVERSITY ENTRANTS	N = 17	N = 81
Total Earned Hours	104.2	76.7
Total Years	5.0	3.9
Cumulative GPA	2.44	2.48
% in Good Standing	64.7%	87.6%

Note. Total earned hours are transfer hours and university earned hours combined. Total years may include discontinuous enrollment.

TABLE 4

Description of the Variables Used in the Logistic Regression Analyses

VARIABLE CODE NAME	*DESCRIPTION*	*RANGE OF VALUES*
SEX	Gender	1 = Female 0 = Male
REMCRS	Number of remedial courses	0 to 4
INTENT	Intent to transfer	1 = Transfer 0 = Other
ACCEPT	Percent of community college credit accepted	0 to 100
CCPROG	Community college semesters in poor standing	1 = No semesters 0 = One or more
GPACHG	Change in GPA	-4.0 to +4.0
UNIVPROG	University semesters in poor standing	1 = No semesters 0 = One or more
ENTRY	Time of entry into community college	1 = Within one year 0 = Delayed entry
PART	Semesters enrolled part-time	0 to 100
SKIPSEM	Semesters skipped	0 to 3
ASSOC	Transfer with associate's degree	1 = With a degree 0 = Without a degree
TRLEVEL	Total transfer hours	1 = 12 to 24 2 = 25 to 55 3 = 56+
REVTRAN	Reverse transfer to community college	1 = Reverse transfer 0 = No reverse tran
COENR	Semesters of co-enrollment	0 to 3

goodness-of-fit statistics for the final set of significant predictors in the logistic regression models for minorities and non-minorities.

For the three variables representing student-oriented characteristics in this study (gender, high school preparation, and initial student intent), frequencies indicated non-minority graduates were more likely to be female and both minority and non-minority graduates were less likely to take remedial courses than were non-graduates, while little difference was observed between graduates and non-graduates in terms of initial intent. However, none of these variables were found to be significant predictors of graduation for either minorities or non-minorities.

In terms of the four institution-oriented variables (academic progress at the community college, academic progress at the university, acceptance of transfer credits, and change in GPA), results indicated "transfer shock" did occur to some degree for all students, i.e., both graduates and non-graduates experienced a decline in GPA after transfer. Non-graduates also experienced greater academic difficulty at both institutions (as indicated by smaller proportions of students remaining in good academic standing) and had smaller proportions of credits accepted by the university than did graduates. In the regression models, only acceptance of credits and academic progress at the university were significant for minorities and non-minorities.

Among the non-traditional enrollment-related variables (delayed entry into post-secondary education, non-continuous enrollment, and part-time enrollment), more minority non-graduates delayed entry into the community college after high school graduation; however, this variable was not significant for either minorities or non-minorities. Furthermore, over three times as many non-graduates skipped one or more semesters after initial entry, and non-graduates attended part-time 32 to 36 percent of the time compared to only 11 to 16 percent of the time for graduates. Both of these variables were found to be significant predictors in the models.

Among the characteristics reflecting non-traditional patterns in terms of transfer behavior (transferring without an associate's degree, transferring with low hours, reverse transfer from a four-year to a two-year institution, and simultaneous enrollment at four-year and two-year institutions), results indicated graduates were more likely to transfer 56 or more hours (67 percent of non-minority graduates compared to only 48 percent of non-graduates) and less than seven percent of both minority and non-minority graduates were classified as reverse transfers compared to over a third of non-graduates. However, these variables were significant for non-minorities only. Approximately 40 percent of the students co-enrolled at the two institutions for one or more semesters, but no difference was noted between graduates and non-graduates, suggesting the phenomenon of co-enrollment may simply serve as a viable alternative for completing required coursework, possibly due to the close proximity of the two institutions. Similarly, less than one fourth of the students transferred with an associate's degree, with little impact on degree completion.

Evaluation of the models for minorities and non-minorities in terms of goodness-of-fit and predictive ability indicated that both models fit the data well with X^2 values significant at $p < .001$ (see Table 6). Furthermore, 85.8 percent of the minority cases and 82.0 percent of the non-minority cases were correctly predicted. In addition, the percentage of concordant-pair predictions fell at 90 percent or higher for both models. In short, the probability of degree completion for both minority and non-minority community college transfer students is enhanced by having a greater percentage of credits accepted, remaining in good academic standing at the university, enrolling full-time, and maintaining continuous enrollment. Although minorities and non-minorities were impacted primarily by the same factors, non-minority progress toward degree completion also was influenced in part by transferring with high hours and not returning to the community college after transfer.

TABLE 5

Profiles of Graduates and Non-Graduates for Variables in the Logistic Regression

VARIABLES	*MINORITY*		*NON-MINORITY*	
	Graduates	*Non-Grads*	*Graduates*	*Non-Grads*
Student-Oriented	N = 87	N = 110	N = 476	N = 506
Female	51.7%	48.2%	49.8%	42.5%
Remedial Courses	55.2%	64.5%	38.7%	54.1%
Intending to Transfer	60.9%	60.0%	64.7%	59.9%
Institution-Oriented				
Community College Good Standing	92.0%	80.9%	94.5%	78.3%
University Good Standing	75.9%	36.4%	81.9%	51.0%
Avg % Credits Accept	85.3	75.3	88.8	78.4
Avg Change in GPA	-0.4	-0.8	-0.3	-0.7
Enrollment-Related				
Delayed Entry	11.5%	25.4%	16.2%	19.2%
Skipped Semesters	13.8%	54.6%	16.2%	56.9%
Avg % Part-Time Sem	11.2	32.2	16.4	35.6
Transfer-Related				
Associate Degree	20.7%	23.6%	18.3%	15.8%
Transfer with 56+ Hrs	71.3%	56.4%	66.6%	48.4%
Reverse Transfer	6.9%	35.4%	5.7%	37.6%
Co-Enrolled	37.9%	40.9%	40.6%	40.7%

TABLE 6

Summary of Steps in the Logistic Regression

STEP	*VARIABLE*	*ENTRY CRITERION* Score Chi-Square	*GOODNESS-OF-FIT* G^2	X^2
Model for Minorities				
0	Intercept		270.409	
1	PART	50.8535	204.941	65.467
2	SKIPSEM	33.8356	167.723	102.686
3	ACCEPT	21.7150	143.388	127.021
4	UNIVPROG	12.5262	131.103	139.306
Model for Non-Minorities				
0	Intercept		1360.424	
1	PART	183.1000	1153.548	206.876
2	SKIPSEM	153.1000	988.199	372.225
3	ACCEPT	90.7852	890.398	470.026
4	UNIVPROG	59.0723	831.691	528.733
5	REVTRAN	31.1473	799.728	560.697
6	TRLEVEL	10.0994	789.692	570.733

PREDICTIVE ABILITY	Percentage of Cases Correctly Predicted	Percentage of Concordant-Pair Predictions
Minority Model	85.8%	93.0%
Non-Minority Model	82.0%	89.5%

Note. Entry level significance set at $p < .01$.
All X^2 statistics are significant at $p < .001$.

Conclusions and Recommendations

Results of the study indicated that initial enrollment at the community college did lessen the probability of graduating, especially *within a reasonable amount of time*. Not only were graduation rates for community college entrants consistently lower than those for university entrants over time, large proportions of community college entrants required over seven years to complete their degree. In addition, comparisons of minorities and non-minorities revealed slightly lower graduation rates for minorities in both the community college and the university entering groups. However, this study did not find substantial differentiation between minorities and non-minorities in terms of non-traditional characteristics. For example, minority transfer students were just as likely as non-minority transfers to enter directly out of high school and in fact were more likely to enroll full-time, enroll continuously, transfer with higher hours, and obtain an associate's degree prior to transfer. Furthermore, minorities were affected by many of the same factors associated with successful degree completion as were non-minorities.

These findings and a review of the factors associated with persistence to degree completion direct attention to a number of policy recommendations and implications for further research:

(1) The inability of the student-oriented characteristics to explain adequately persistence to graduation suggests the need to incorporate a more comprehensive set of background characteristics. As noted in the literature review, low socioeconomic status has been found to negatively impact student progress toward degree completion. Currently, the longitudinal files supplied by the two institutions do not provide any measures of socioeconomic status, such as family income or financial need. Identification of a set of indicators that can be incorporated into the files would enhance greatly future research in this area.

(2) Findings indicate enrolling on a part-time basis and skipping semesters considerably decrease a student's chances of completing a baccalaureate degree within a reasonable

amount of time. Extended persistence as such is not unexpected; however, the cohort analysis revealed large numbers of transfer students continued to depart without graduating even after seven years, many with poor academic records. Despite lessening the odds of graduating, these non-traditional patterns are becoming increasingly more commonplace in higher education as increasing numbers of students balance studies with outside work and family responsibilities. Whether or not these students are able to persist for long periods of time holds serious implications for financial aid policies, which tend to "award" aid to full-time registrants.

(3) Another area of concern to both institutions is the significant impact of loss of credits during the transfer process. Up to 25 percent of community college credits earned by non-graduates were not accepted toward their degree. Further analysis is needed to determine the nature of the lost credit, e.g., whether the loss was due to remedial coursework, poor grades, or lack of direction. Improved advising at both institutions may lessen the accumulation of excess hours and consequently lessen the amount of time needed to complete a baccalaureate degree.

(4) The large proportion of non-graduates (over 35 percent) who return to the community college after transferring, coupled with the inability of many to maintain academic good standing (over 50 percent) suggests a number of transfer students may be unable to compete academically in a university setting. A closer analysis of the relationship between reverse transfers, number of hours transferred, and academic progress at the university will shed light on the extent and nature of inadequate preparation for upper division work. The impact of poor preparation becomes a concern for both institutions in terms of academic advisement and counseling to ensure a level of competency is reached before transferring. In addition, it suggests the need for a reevaluation of admissions and competencies policies for transfer students.

Final consideration should be given to expanding research on the missing component of this study. Specifically, the sample for analysis was limited to students who *successfully*

transferred to the university. Little information is available on students entering the community college with an intent to transfer but who in fact never do. Results of this study indicated that initial intent was not sufficient for identifying a desire to transfer. However, the longitudinal files utilized in this study would provide an opportunity to track entering community college students through a program of study to determine if course-taking behavior served as a better indicator than initial intent. Similar analyses could then be undertaken to provide a more complete picture of the impact of the community college on the academic progress of students with an ultimate goal of attaining a baccalaureate degree.

In summary, this study was conducted in an effort to better understand the role of the community college in the academic progress of transfer students by utilizing an extensive source of information that allowed the tracking of students from initial entry into community college through successful transfer to the university and, for some students, to ultimate baccalaureate degree completion. Calculation of graduation rates and identification of factors that impact successful degree completion enables both institutions to understand more fully the nature of student flow through an educational pipeline that is dependent on strong linkages between these two sectors. Expanding knowledge and insight in these areas will provide administrators, advisors, and faculty a stronger foundation for developing programs or interventions to assist specific student populations in progressing toward degree completion, in particular underrepresented minority students, who currently exhibit lower graduation rates.

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